Few comparative values, so ranking order from best oxidation resistance to worst:

**10 [1] Inconel 740** – oxidation in air + vapor at 700C for 4,032h

Mass change = .472 mg/cm2

Metal Loss = 2.5 microns

Depth of Attack = 14.0 microns

**10 [2] Inconel 718** Oxidation in Air

Resistant up to 982C

800C for 650 h

Mass gain = .25 mg2/cm4

**10 [] 316Ti**

760C for 100 h

Weight change = .1 mg/cm2

**9 [] Nimonic 105**

800C for 100 h

Weight loss = .11 mg/cm2

**9 [] Nimonic 115**

**8 [3] Inconel 617**

Excellent resistance in moist air at 1000C

980C at 100h

Weight gain = 3.5mg/cm2

**8 [3] Inconel 625**

Excellent resistance up to 1093 C

**6 [4] Haynes 230**– 871 C over 1000H (dynamic, combustion)

Metal loss = 25 microns

Avg depth = 30 microns

Max depth = 38 microns

Avg metal affected = 56 microns

Max metal affected = 64 microns

980C over 1008 hours

Avg metal affected = 18 microns

**6 [5] Haynes 263** – 871 C over 1008 H (static)

Metal loss = 3 microns

Avg depth = 8 microns

Max depth = 43 microns

Avg metal affected = 11 microns

Max metal affected = 46 microns

871 C over 1000H (dynamic, combustion)

Metal loss = 36 microns

Avg depth = 66 microns

Max depth = 76 microns

Avg metal affected = 102 microns

Max metal affected = 112 microns

980C over 1008 hours

Avg metal affected = 145 microns

980C at 100h

Weight gain = 8.2 mg/cm2

**6 [6] Haynes 282** – 871C over 1008H (static)

Metal loss = 5 microns

Avg depth of attack = 10 microns

Max attack = 30 microns

Avg metal affected = 15 microns

Max affected = 35

combustion w/ gas velocity at 871C for 1008

Metal loss = 46 microns

Avg depth = 61 microns

Max depth = 71 microns

Avg metal affected = 107 microns

Max metal affected = 117 microns

**5 [7] Waspaloy**– 871 C over 1008H (static)

Metal loss = 8 microns

Avg depth = 28 microns

Max depth = 36 microns

Avg metal affected = 36 microns

Max metal affected = 44 microns

871 C over 1000h (dynamic, combustion)

Metal loss = 46 microns

Avg depth = 64 microns

Max depth = 71 microns

Avg metal affected = 109 microns

Max metal affected = 117 microns

980C over 1008 hours

Avg metal affected = 23 microns

Nimonic 105 (air after 100 hours at 800C 🡪 Mass loss = 0.11mg/cm2)

Nimonic 115

Udimet 700

Udimet 710

Udimet 720

ODS-Fe-Cr-Al

[1] <http://www.hightempmetals.com/techdata/hitempInconel617data.php>

# [2] Oxidation of Inconel 718 in Air at High Temperatures, [G. A. Greene](http://www.springerlink.com/content/?Author=G.+A.+Greene) and [C. C. Finfrock](http://www.springerlink.com/content/?Author=C.+C.+Finfrock). [OXIDATION OF METALS](http://www.springerlink.com/content/0030-770x/), [Volume 55, Numbers 5-6](http://www.springerlink.com/content/0030-770x/55/5-6/), 505-521

**[3]** <http://www.hightempmetals.com/techdata/hitempInconel625data.php#3>